

LM-79-08 Test Report

For

L-TECH CORPORTION

(Brand Name: L-TECH CORP)

SHAOGANGTOU DISTRICT.QIAOTOU TOWN.DONGGUAN
CITY.GUANGDONG PROVINCE,CHINA

LED Luminaire

Model name(s): LRKT563W-NC-3090
LRKT563W-NC-4090

Representative (Tested) Model: LRKT563W-NC-3090
LRKT563W-NC-4090

Model Different: N/A

Test & Report By:

Candice Liao

Engineer: Candice Liao

Date: Apr. 4, 2017

Review By:

Univ Xie

Manager: Univ Xie

Note: 1. The results contained in this report pertain only to the tested samples.

2. This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Laboratory: Standard-Tech Co., Ltd Testing Center
NVLAP CODE: 201011-0

Report Format Number STD/QR4909-A/2

Address: Standard-Tech Building, No.6 Guanhong Road,Guangzhou Science City, Guangzhou 510663, China

Tel: 8620-3229 0320

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<http://www.standard-tech.com>

1.1 Product Information:

Organization Name	L-TECH CORPORTION	
Brand Name	L-TECH CORP	
Model Number	LRKT563W-NC-3090 LRKT563W-NC-4090	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaire	
Rated Voltage / Frequency	120Vac, 60 Hz	
Nominal Power	16W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K, 4000K	
LED Manufacturer	Edison	
LED Model	2T03X5WWA9003001, 2T03X5NWA9003001	
Sample Number	GZE1803067-H-B1(3000K),B2(4000K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo



1.2 Test Specifications:

Date of Receipt	Mar.22, 2017
Date of Test	Mar.26, 2017
Test item	<ol style="list-style-type: none"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

1.3 Test Methods

<p>1) Photometric and Light Distribution Measurement – Goniophotometer Method: Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25° C ± 1° C, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.</p>
<p>2) Chromaticity Measurement – Sphere-Spectroradiometer Method: Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25° C ± 1° C. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.</p>
<p>3) Electrical Measurements: Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25° C ± 1° C. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.</p>

2.1 Electrical, Photometric and Chromaticity Measurements
(Refer to Work Instruction QD25)

Test date	2018-03-26	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LRKT563W-NC-3090		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE180306 7-H-B1	120.0	60	0.1320	15.28	0.9647

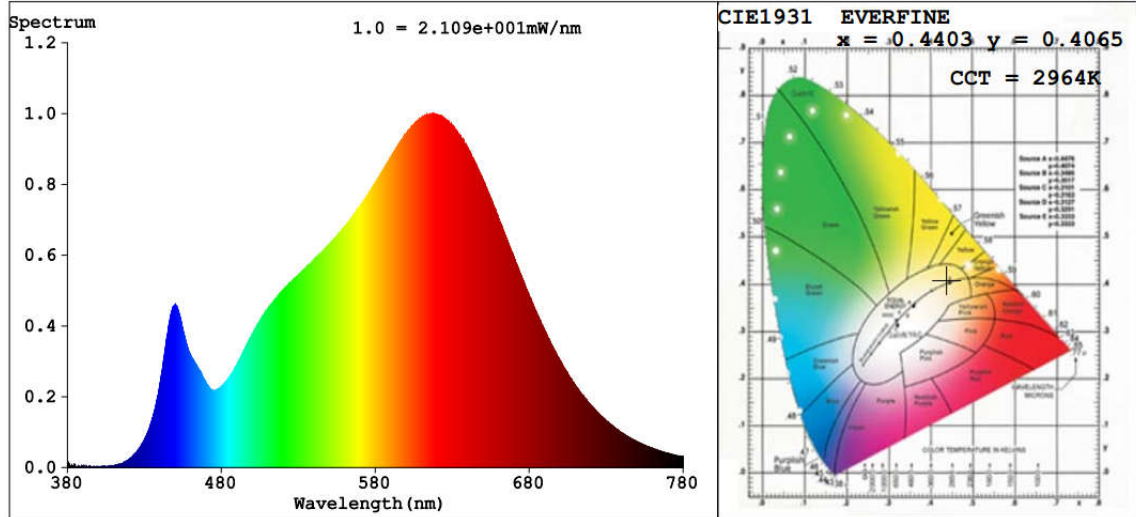
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	92	R9	53
Frequency (Hz)	60	R2	96	R10	89
CCT (K)	2964	R3	99	R11	93
Duv	0.0005	R4	92	R12	83
Chromaticity (x, y)	x=0.4403 y=0.4065	R5	91	R13	93
Chromaticity (u', v')	u'=0.2517 v'=0.5228	R6	95	R14	99
Color Rendering Index (CRI)	91.8	R7	91	R15	87
R9	53	R8	79	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1214.4
Luminous Efficacy (lm/W)	79.48
Beam Angle (°)	105.1
Center Beam Candle Power (cd)	483

Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	370.1	30.5%
0-40	601.1	49.5%
0-60	1,030.2	84.8%
60-90	184.0	15.2%
70-100	53.9	4.4%
90-120	0.0	0%
0-90	1,214.2	100%
90-180	0.0	0%
0-180	1,214.3	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	45.6	3.8%	90-100	0.0	0%
10-20	129.9	10.7%	100-110	0.0	0%
20-30	194.6	16.0%	110-120	0.0	0%
30-40	230.9	19.0%	120-130	0.0	0%
40-50	232.3	19.1%	130-140	0.0	0%
50-60	196.9	16.2%	140-150	0.0	0%
60-70	130.1	10.7%	150-160	0.0	0%
70-80	48.5	4.0%	160-170	0.0	0%
80-90	5.4	0.4%	170-180	0.0	0%

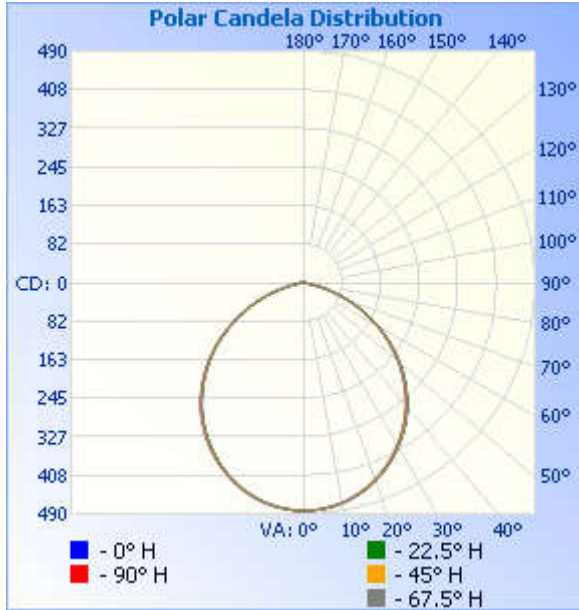
Laboratory: Standard-Tech Co., Ltd Testing Center
 NVLAP CODE: 201011-0

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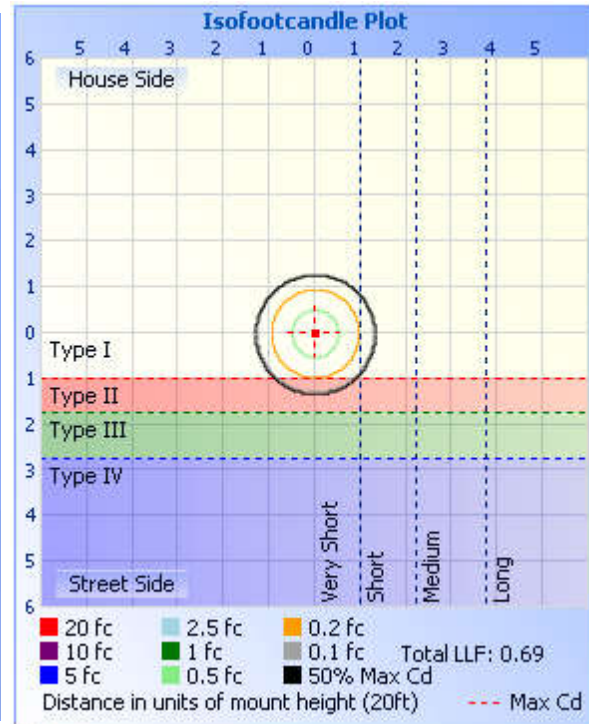
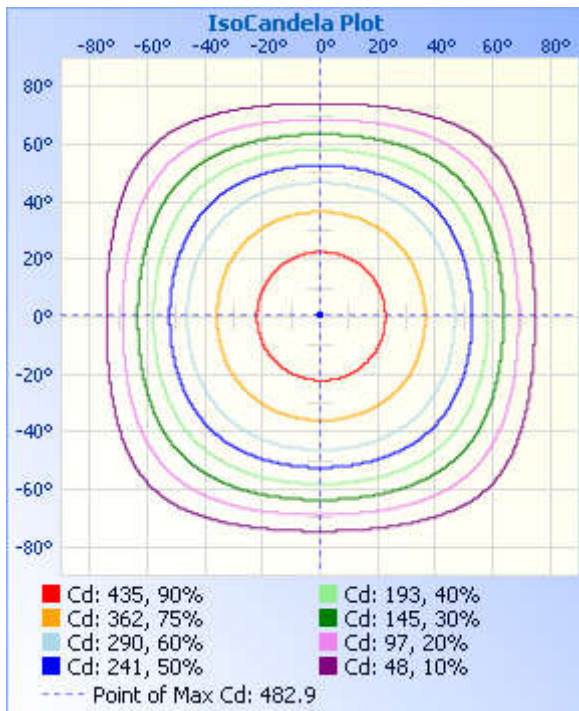
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
4.0ft	30.2 fc	10.5 ft	10.4 ft
8.0ft	7.5 fc	20.9 ft	20.9 ft
12.0ft	3.4 fc	31.4 ft	31.3 ft
16.0ft	1.9 fc	41.8 ft	41.8 ft
20.0ft	1.2 fc	52.3 ft	52.2 ft

■ Vert. Spread: 105.1°
■ Horiz. Spread: 105.1°



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Table--1

UNIT: cd

C (DEG) y (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338	
0	483	483	483	483	483	483	483	483	483	483	483	483	483	483	483	483	
5	480	481	481	481	481	481	481	481	480	480	480	480	480	480	480	480	
10	473	473	474	474	474	474	474	473	473	472	472	471	472	472	472	473	
15	461	461	462	462	463	462	462	461	461	460	459	459	459	459	459	460	
20	444	445	445	446	446	446	445	444	444	443	442	441	441	442	442	443	
25	422	424	425	425	426	425	425	423	423	421	420	420	420	420	421	422	
30	398	399	400	401	401	401	400	399	398	396	395	394	394	395	396	397	
35	369	370	372	373	374	373	372	371	370	368	367	366	366	366	367	369	
40	337	339	340	341	342	342	341	339	338	336	334	334	333	334	335	337	
45	301	303	304	305	306	306	305	303	302	300	298	298	297	297	298	300	
50	262	263	265	266	268	267	266	265	263	261	260	259	258	258	259	261	
55	219	221	223	224	225	225	224	223	222	220	218	217	216	216	217	219	
60	175	177	178	180	181	181	180	179	179	177	175	174	173	173	174	175	
65	130	131	133	134	135	135	135	134	134	132	131	129	128	128	129	130	
70	84.5	85.9	87.3	88.5	89.4	89.6	89.2	88.4	88.6	87.2	85.8	84.5	83.5	83.1	83.5	84.5	
75	42.4	43.8	45.1	46.2	45.6	47.1	46.8	46.1	45.8	44.6	43.4	42.2	41.4	41.1	41.3	42.1	
80	12.9	13.5	14.2	13.5	12.1	14.0	15.1	14.7	15.8	15.8	13.5	12.4	11.2	11.9	12.6	12.9	
85	5.22	5.43	4.73	3.82	3.54	4.01	5.09	5.86	5.81	5.62	4.59	3.34	2.76	3.21	4.37	5.22	
90	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
120	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
125	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
130	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
135	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.02	
140	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.02	0.02	
145	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.02	0.02	
150	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.02	0.02	
155	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	
160	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	
165	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	
170	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
175	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
180	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	

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2.2 Electrical, Photometric and Chromaticity Measurements
(Refer to Work Instruction QD25)

Test date	2018-03-26	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LRKT563W-NC-4090		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE180306 7-H-B2	120.0	60	0.1276	14.71	0.9605

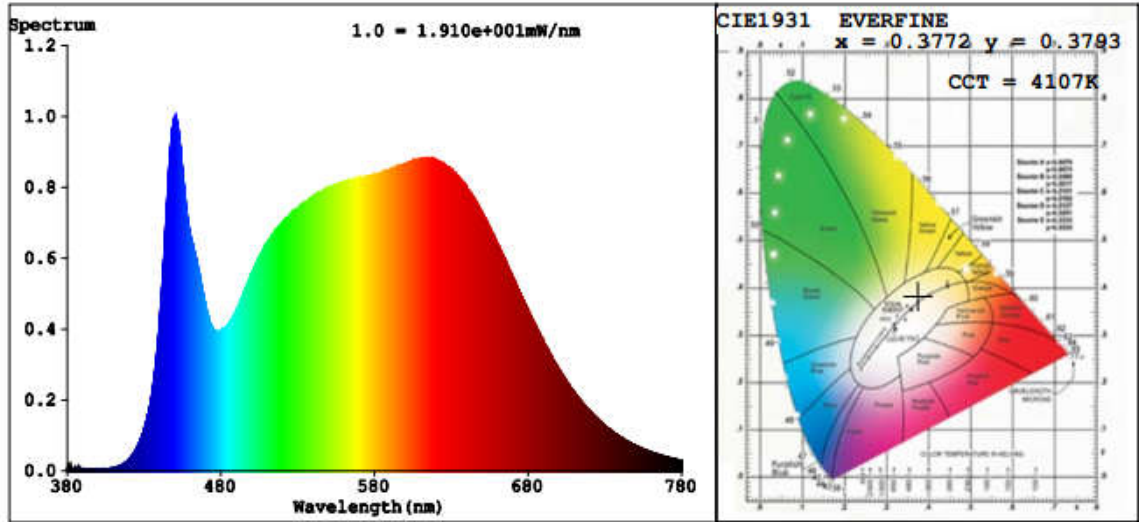
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	92	R9	65
Frequency (Hz)	60	R2	95	R10	87
CCT (K)	4107	R3	96	R11	92
Duv	0.0022	R4	93	R12	71
Chromaticity (x, y)	x=0.3772 y=0.3793	R5	91	R13	93
Chromaticity (u', v')	u'=0.2220 v'=0.5022	R6	92	R14	97
Color Rendering Index (CRI)	92.6	R7	95	R15	90
R9	65	R8	87	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1234.8
Luminous Efficacy (lm/W)	83.94
Beam Angle (°)	105.3
Center Beam Candle Power (cd)	490

Spectral Power Distribution & Chromaticity Diagram

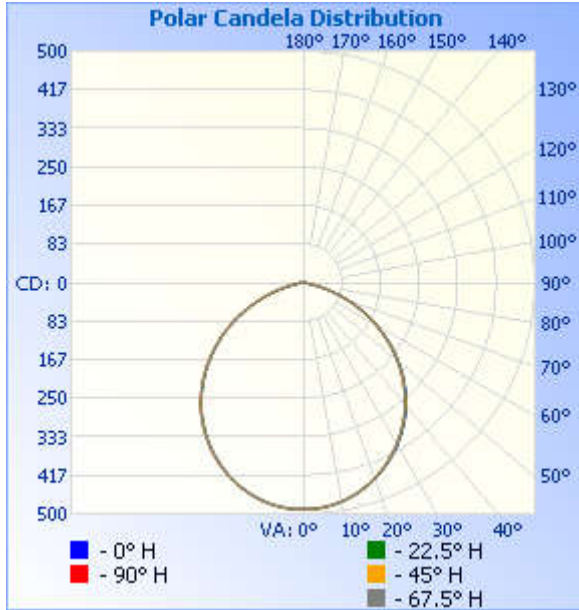


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	376.0	30.5%
0-40	610.7	49.5%
0-60	1,047.3	84.8%
60-90	187.3	15.2%
70-100	54.9	4.4%
90-120	0.0	0%
0-90	1,234.6	100%
90-180	0.1	0%
0-180	1,234.7	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	46.3	3.8%	90-100	0.0	0%
10-20	131.9	10.7%	100-110	0.0	0%
20-30	197.8	16.0%	110-120	0.0	0%
30-40	234.8	19.0%	120-130	0.0	0%
40-50	236.2	19.1%	130-140	0.0	0%
50-60	200.4	16.2%	140-150	0.0	0%
60-70	132.4	10.7%	150-160	0.0	0%
70-80	49.3	4.0%	160-170	0.0	0%
80-90	5.5	0.4%	170-180	0.0	0%

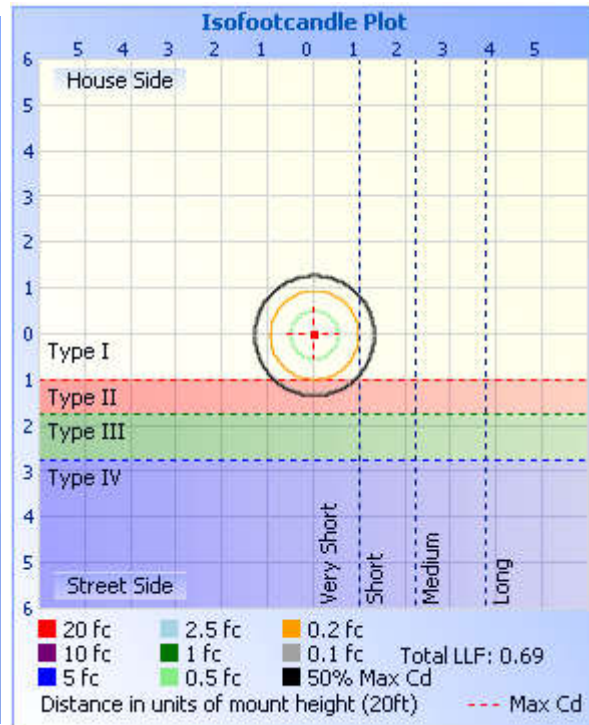
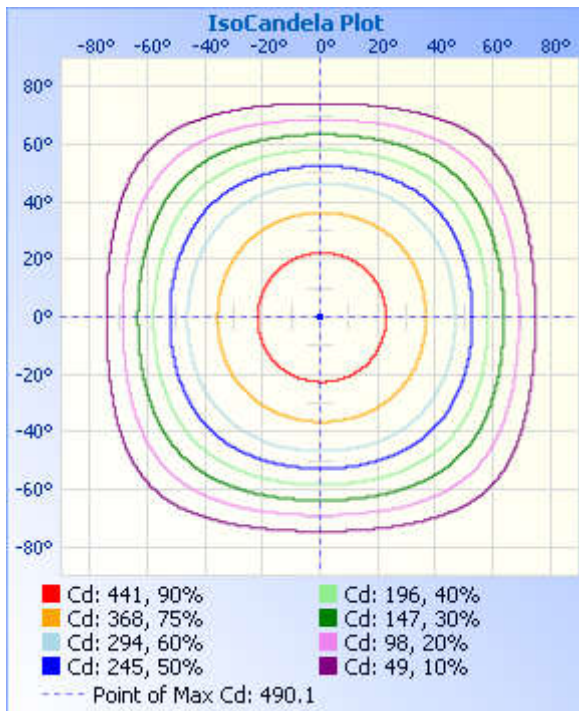
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
4.0ft	30.6 fc	10.5 ft	10.5 ft
8.0ft	7.7 fc	21.0 ft	20.9 ft
12.0ft	3.4 fc	31.5 ft	31.4 ft
16.0ft	1.9 fc	42.0 ft	41.9 ft
20.0ft	1.2 fc	52.4 ft	52.3 ft

■ Vert. Spread: 105.3°
■ Horiz. Spread: 105.2°



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Table--1

UNIT: cd

C (DEG) y (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	490	490	490	490	490	490	490	490	490	490	490	490	490	490	490	490
5	488	488	488	488	488	487	488	487	487	487	487	487	487	487	488	488
10	480	480	481	481	480	480	480	480	480	479	480	480	480	480	480	480
15	468	468	469	469	468	468	467	467	467	467	467	467	467	467	468	468
20	451	452	452	452	451	451	450	450	450	449	450	450	450	450	451	451
25	430	431	431	431	431	430	429	428	428	428	428	428	429	429	430	430
30	405	406	406	406	406	405	403	403	403	403	403	403	403	404	404	405
35	376	377	378	378	377	376	375	374	374	374	374	374	374	375	376	376
40	344	345	346	346	345	344	343	342	342	342	342	342	342	342	343	344
45	307	308	309	310	309	308	306	305	306	305	305	305	305	305	306	307
50	267	268	270	270	270	269	267	266	267	266	266	265	265	266	267	267
55	224	225	227	227	227	226	225	224	225	224	223	223	223	223	224	224
60	179	180	181	182	182	182	181	180	181	180	179	178	178	179	179	180
65	132	134	135	136	136	136	135	134	135	134	133	132	132	132	133	134
70	86.4	87.2	88.5	89.4	90.0	90.2	89.6	88.8	89.5	88.4	87.3	86.4	86.0	86.1	86.5	87.2
75	43.8	44.6	45.5	46.4	46.2	47.2	46.8	46.1	46.1	45.0	44.0	43.3	42.5	43.1	43.3	44.0
80	13.6	14.0	14.4	14.2	12.8	14.5	15.0	14.6	15.9	15.4	13.7	12.2	11.0	11.9	13.4	13.6
85	5.47	5.69	5.07	4.11	3.78	4.21	5.30	5.90	5.89	5.74	4.58	3.29	2.72	3.21	4.38	5.46
90	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
115	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
120	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
125	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
130	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01
135	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.02	0.02
140	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.02	0.02
145	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.02	0.02
150	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
155	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
160	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
165	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.02	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02
170	0.01	0.01	0.01	0.02	0.01	0.04	0.02	0.02	0.04	0.04	0.03	0.03	0.03	0.01	0.02	0.02
175	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.03	0.02	0.01	0.01	0.01	0.01
180	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00

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 NVLAP CODE: 201011-0

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3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2017-07-01	2018-06-30
ST-R-331	Spectral analysis system HAAS-2000	2017-07-01	2018-06-30
D204	Standard Lamp	2017-07-01	2018-06-30
PF2010	Power Meter for Integrating Sphere	2017-07-01	2018-06-30
EE-09	Goniophotometer system	2017-07-01	2018-06-30
D908S	Standard Lamp	2017-07-01	2018-06-30
PF210	Power Meter for Goniophotometer	2017-07-01	2018-06-30

Uncertainty:

Photometric Measurement (Sphere):1.74%

Chromaticity Measurement(Sphere):14.3K

Photometric Measurement(Goniophotometer):1.62%

******* END OF REPORT *********Laboratory: Standard-Tech Co., Ltd Testing Center**
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